

REPLACEMENT SHEET

2/8

DRAFT

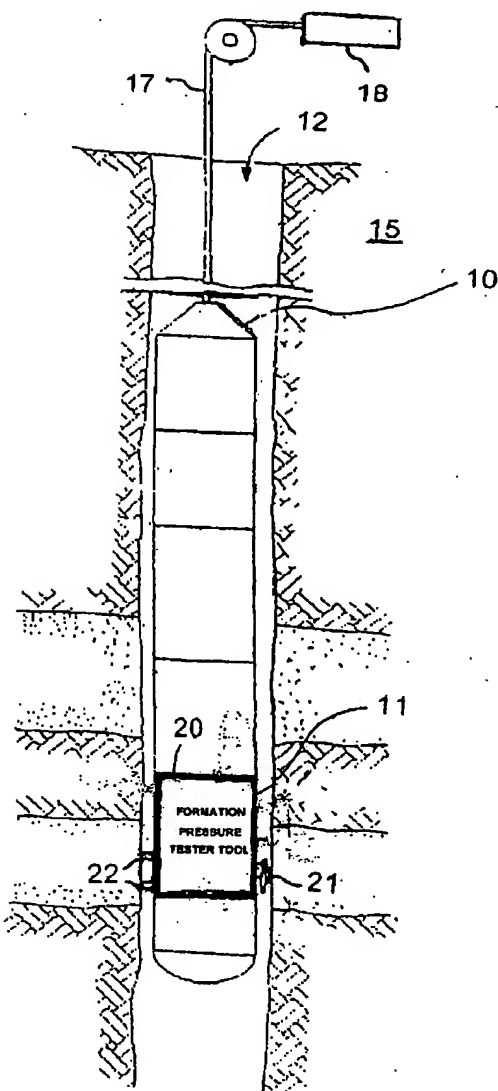


FIG. 2

REPLACEMENT SHEET

3/8

DRAFT

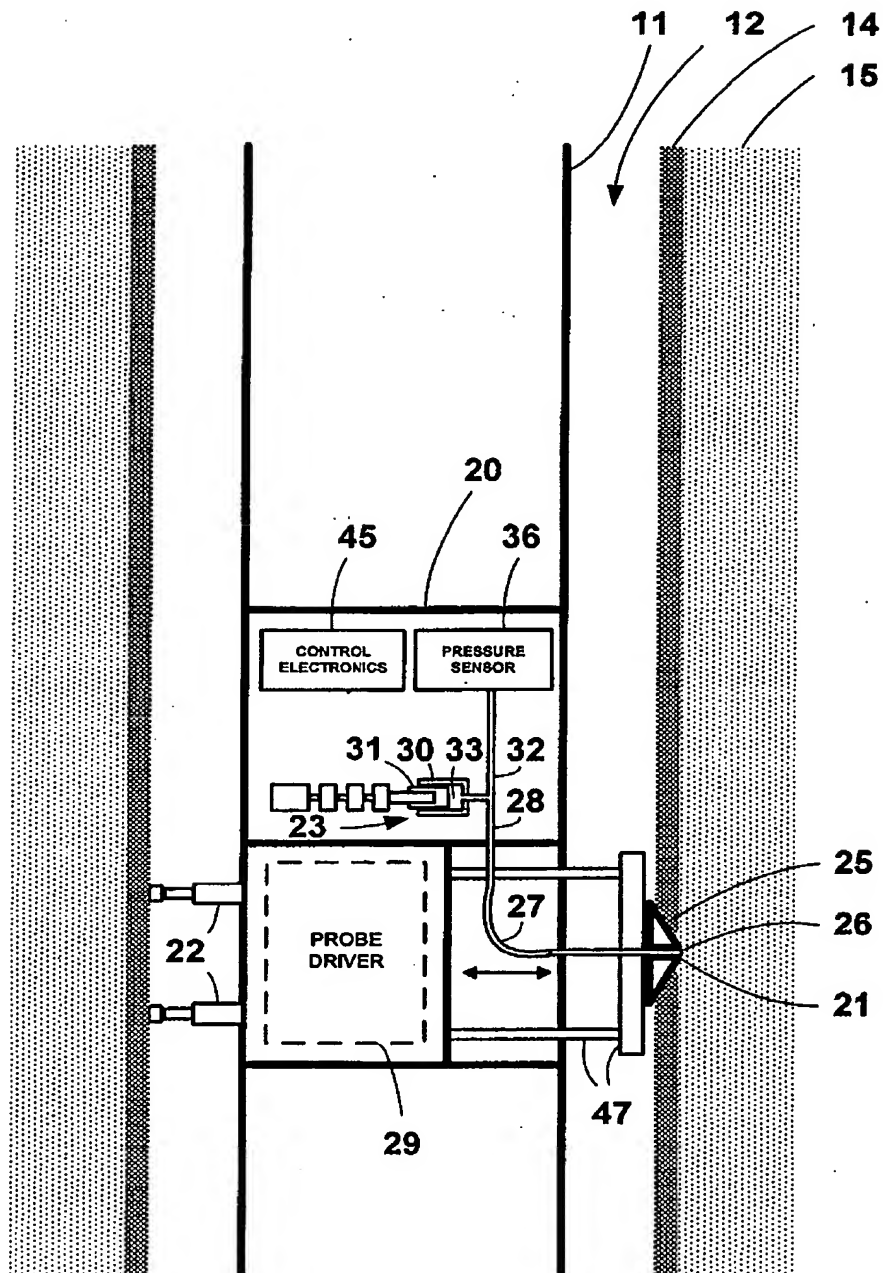


FIG. 3

4/8

DRAFT

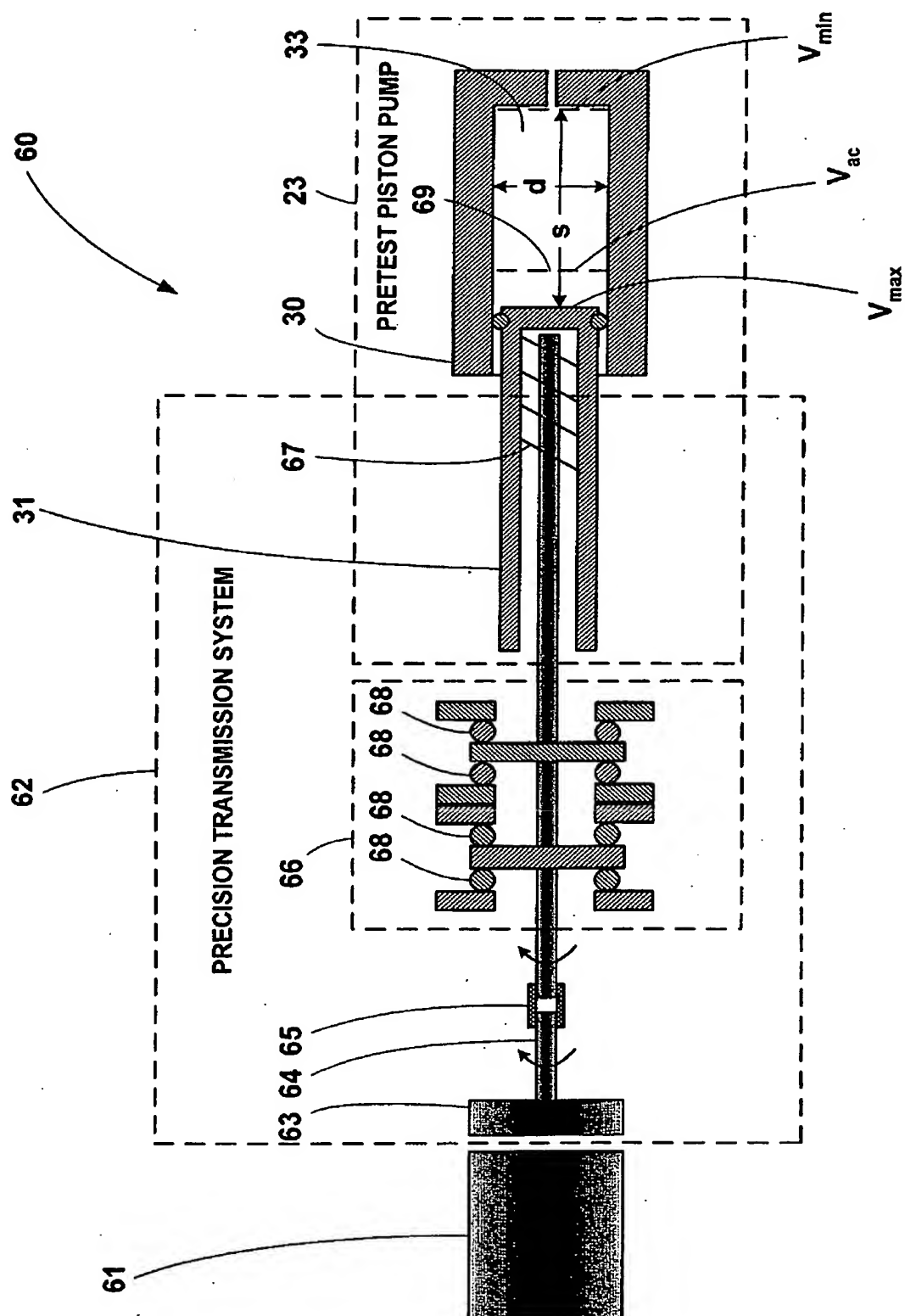


FIG. 4

718

DRAFT

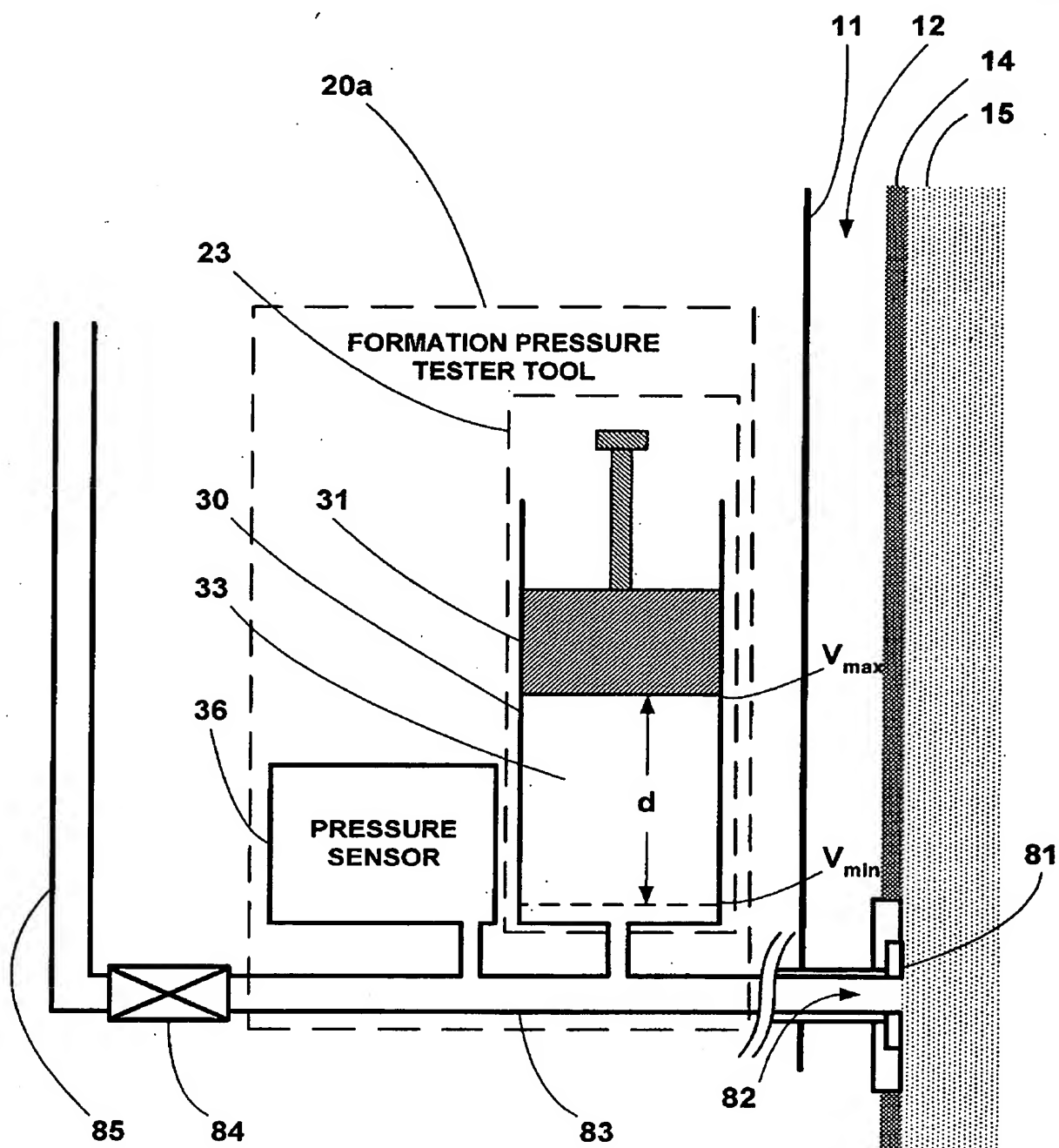


FIG. 7

3/8

DRAFT



DRAFT

[0032] FIG. 2 shows formation pressure tester tool 20 of the invention located within wireline tester 10. The wireline tester is shown located in borehole 12, suspended from logging cable 17, and coupled electrically to surface system 18 via electrical wires in the logging cable.

[0033] FIG. 2 shows probe 21 protruding from elongated body 11 and in physical contact with formation 15 at one side of the borehole. With probe 21 in physical contact with the borehole wall, formation pressure tester tool 20 is held stationary in the borehole by two distal hydraulic anchoring pistons 22 exerting counter-force against the opposite side of the borehole. ~~Pressure sensor 36 is coupled to measure pressure in the variable volume cavity of pretest chamber 30. Downhole programmable control electronics 45 controls the sequencing and timing of the steps of the method by timing measurements from pressure sensor 36 and by controlling pretest piston pump 23. The pretest piston pump operates to control the volume of a variable volume cavity (item 33 in FIG. 3). In the preferred embodiment the sampling rate for pressure measurements may be set as high as 120Hz.~~

[0034] FIG. 3 shows probe 21 pressed against mud cake 14 by hydraulic anchoring pistons 22, extending from probe driver 29. Pressure sensor 36 is coupled to measure pressure in the variable-volume cavity of pretest chamber 30. Downhole programmable control electronics 45 controls the sequencing and timing of the steps of the method by timing measurements from pressure sensor 36 and by controlling pretest piston pump 23. The pretest piston pump operates to control the volume of variable-volume cavity 33. In the preferred embodiment the sampling rate for pressure measurements may be set as high as 120Hz. Electronics 45 controls pistons 22 via probe driver 29. Downhole programmable control electronics 45 also controls the pushing of frame 47. Hydraulic communication between the formation tester and the formation is achieved by breaking the mud cake seal at the inflow aperture 26 of probe 21. Resilient packer 25 isolates the fluid inside the formation tester from borehole pressure. Aperture 26 is coupled to variable-volume cavity 33 via flexible conduit 27 (of pretest flow line 32) and rigid conduit 28. Flexible conduit 27 accommodates the advancing and retracting motion of probe 21 in the direction of the double arrow in FIG. 3.